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JACOB PAZ: My name is Dr. Jacob Paz. I'm an independent private scientist, and I have some comments
1... to make. Number one, the first comment is the heavy metals. I don't believe that we have accurate -- that nickel will not be released to the environment, particularly when I read both documents -- the Supplement and the engineering science report.

I could not find any relation to zeolite absorption. And the question to come, what will happen which will make way first, the heavy metals or the radionuclides. Specifically what's happening is that hard water usually has an affect of absorption of nickel. I'll give an example.

Like in pure water nickel is absorbed about 58 percent, and hard water it's only 50 percent, so there is a question, which leads me to another conclusion that the rate of release which will come through the environment in the biosphere is not accurate.

Another point which I have not seen adequate response is the issue of complex mixtures. There was a question, how are we going to calculate the risk? The President, the Secretary of DOE, officials always say, we're going to use the best science. At this point in time nobody can tell me what is the real risk, because I can cite from the literature professional organization EPA guidelines which address the issue of complex mixtures and others very clear. There is over about 3,000 references which show interactions to various degrees between heavy metals, carcinogen and noncarcinogens and irradiation.

There is even a mathematical model which has been developed by Dr. Suzuki (phonetic) in Japan and never been implemented. I'm asking rhetorical questions why Yucca Mountain does not use the basic developed technology to describe and to predict the risk, because the current methods are incomplete. Specifically I'm talking about physiological and pharmacokinetic testing, which can take into account metabolism, distribution, extrusion, and being used and advocated by EPA to study complex mixtures.

It's advocated by the EPA, and I'm just puzzled why neither EPA or NRC are looking, and specifically when an NRC official said we separated radionuclides from toxic chemicals. In the same document he forget to mention the recent recommendation for studies.

In my professional opinion unless all those studies would be completed, you should put a halt on Yucca Mountain because there are very serious uncertainties. You cannot predict the rate what so happened to the population. I can give an example.

For instance, if you take nickel, carcinogen is enhanced in the presence of chromium hexavalent. This is just an example, or I can give you references. When you irradiate nickel, the embryo tissue culture, nickel x-ray

1cont or UV, you get an increase in chromosome aberration, inhibition of repair of the DNA and subsequent genetic toxicity, which can increase the rate of carcinicity, and there is no doubt about it.

I am going to give all this information to Abe Van Luik, my friend, who will continue to argue. And I will challenge them, because when it comes to science you have to use to best science. You cannot use the science of the politics. Thank you.